

MC74AC74, MC74ACT74

Dual D-Type Positive Edge-Triggered Flip-Flop

The MC74AC74/74ACT74 is a dual D-type flip-flop with Asynchronous Clear and Set inputs and complementary (Q, \bar{Q}) outputs. Information at the input is transferred to the outputs on the positive edge of the clock pulse. Clock triggering occurs at a voltage level of the clock pulse and is not directly related to the transition time of the positive-going pulse. After the Clock Pulse input threshold voltage has been passed, the Data input is locked out and information present will not be transferred to the outputs until the next rising edge of the Clock Pulse input.

Asynchronous Inputs:

LOW input to \bar{S}_D (Set) sets Q to HIGH level

LOW input to \bar{C}_D (Clear) sets Q to LOW level

Clear and Set are independent of clock

Simultaneous LOW on \bar{C}_D and \bar{S}_D makes both Q and \bar{Q} HIGH

Features

- Outputs Source/Sink 24 mA
- 'ACT74 Has TTL Compatible Inputs
- Pb-Free Packages are Available

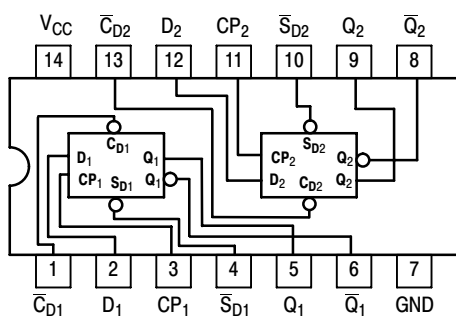


Figure 1. Pinout: 14-Lead Packages Conductors (Top View)

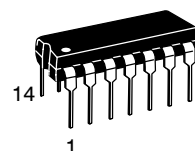
PIN ASSIGNMENT

| PIN | FUNCTION |
|----------------------------------|---------------------|
| D_1, D_2 | Data Inputs |
| CP_1, CP_2 | Clock Pulse Inputs |
| $\bar{C}_{D1}, \bar{C}_{D2}$ | Direct Clear Inputs |
| $\bar{S}_{D1}, \bar{S}_{D2}$ | Direct Set Inputs |
| $Q_1, \bar{Q}_1, Q_2, \bar{Q}_2$ | Outputs |

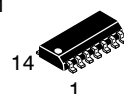


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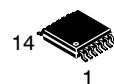
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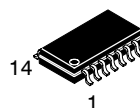
PDIP-14
N SUFFIX
CASE 646



SOIC-14
D SUFFIX
CASE 751A



TSSOP-14
DT SUFFIX
CASE 948G





SOEIAJ-14
M SUFFIX
CASE 965


ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 7 of this data sheet.

MC74AC74, MC74ACT74

TRUTH TABLE (Each Half)

| Inputs | | | | Outputs | |
|-------------|-------------|---|---|---------|-------------|
| \bar{S}_D | \bar{C}_D | CP | D | Q | \bar{Q} |
| L | H | X | X | H | L |
| H | L | X | X | L | H |
| L | L | X | X | H | H |
| H | H |  | H | H | L |
| H | H |  | L | L | H |
| H | H | L | X | Q_0 | \bar{Q}_0 |

NOTE: H = HIGH Voltage Level
 L = LOW Voltage Level
 X = Immaterial;
 = LOW-to-HIGH Clock Transition
 $Q_0(\bar{Q}_0)$ = Previous Q(\bar{Q}) before LOW-to-HIGH Transition of Clock

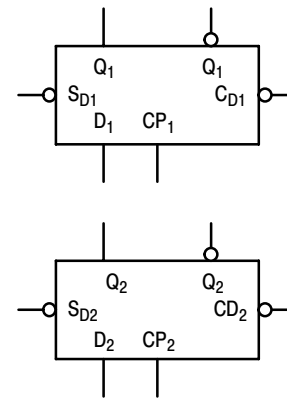
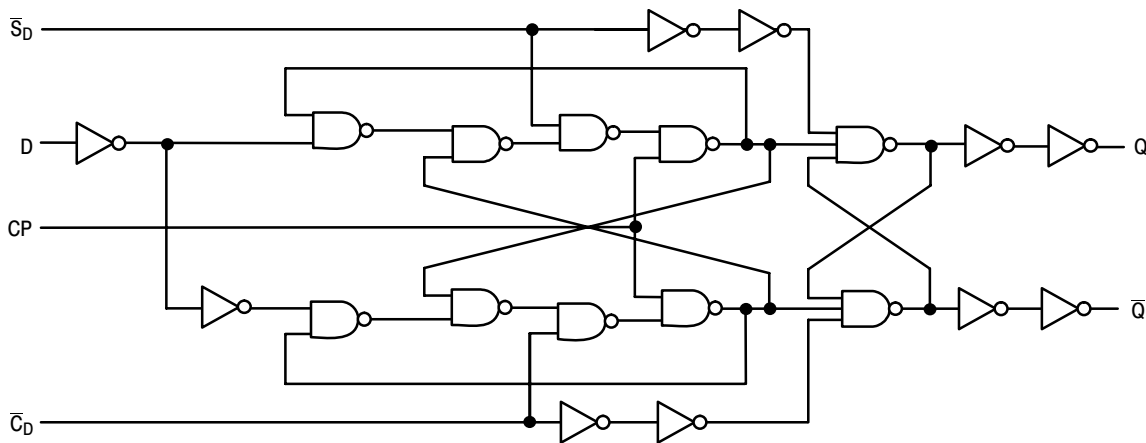


Figure 2. Logic Symbol



NOTE: This diagram is provided only for the understanding of logic operations and should not be used to estimate propagation delays.

Figure 3. Logic Diagram

MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|-----------|---|------------------------|-------------|
| V_{CC} | DC Supply Voltage (Referenced to GND) | -0.5 to +7.0 | V |
| V_{in} | DC Input Voltage (Referenced to GND) | -0.5 to $V_{CC} + 0.5$ | V |
| V_{out} | DC Output Voltage (Referenced to GND) | -0.5 to $V_{CC} + 0.5$ | V |
| I_{in} | DC Input Current, per Pin | ± 20 | mA |
| I_{out} | DC Output Sink/Source Current, per Pin | ± 50 | mA |
| I_{CC} | DC V_{CC} or GND Current per Output Pin | ± 50 | mA |
| T_{stg} | Storage Temperature | -65 to +150 | $^{\circ}C$ |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

MC74AC74, MC74ACT74

RECOMMENDED OPERATING CONDITIONS

| Symbol | Parameter | Min | Typ | Max | Unit | |
|------------------------------------|---|-------------------------|-----|-----------------|------|------|
| V _{CC} | Supply Voltage | 'AC | 2.0 | 5.0 | 6.0 | V |
| | | 'ACT | 4.5 | 5.0 | 5.5 | |
| V _{in} , V _{out} | DC Input Voltage, Output Voltage (Ref. to GND) | 0 | – | V _{CC} | V | |
| t _r , t _f | Input Rise and Fall Time (Note) 'AC Devices except Schmitt Inputs | V _{CC} @ 3.0 V | – | 150 | – | ns/V |
| | | V _{CC} @ 4.5 V | – | 40 | – | |
| | | V _{CC} @ 5.5 V | – | 25 | – | |
| t _r , t _f | Input Rise and Fall Time (Note) 'ACT Devices except Schmitt Inputs | V _{CC} @ 4.5 V | – | 10 | – | ns/V |
| | | V _{CC} @ 5.5 V | – | 8.0 | – | |
| T _J | Junction Temperature (PDIP) | – | – | 140 | °C | |
| T _A | Operating Ambient Temperature Range | –40 | 25 | 85 | °C | |
| I _{OH} | Output Current – High | – | – | –24 | mA | |
| I _{OL} | Output Current – Low | – | – | 24 | mA | |

- V_{in} from 30% to 70% V_{CC}; see individual Data Sheets for devices that differ from the typical input rise and fall times.
- V_{in} from 0.8 V to 2.0 V; see individual Data Sheets for devices that differ from the typical input rise and fall times.

DC CHARACTERISTICS

| Symbol | Parameter | V _{CC} (V) | 74AC | | 74AC | Unit | Conditions | | | |
|------------------|--------------------------------------|------------------------|------------------------|-------------------|---------------------------------------|---|--|---|------|------|
| | | | T _A = +25°C | | T _A = –40°C to +85°C | | | | | |
| | | | Typ | Guaranteed Limits | | | | | | |
| V _{IH} | Minimum High Level Input Voltage | 3.0 | 1.5 | 2.1 | 2.1 | V | V _{OUT} = 0.1 V or V _{CC} – 0.1 V | | | |
| | | 4.5 | 2.25 | 3.15 | 3.15 | | | | | |
| | | 5.5 | 2.75 | 3.85 | 3.85 | | | | | |
| V _{IL} | Maximum Low Level Input Voltage | 3.0 | 1.5 | 0.9 | 0.9 | V | V _{OUT} = 0.1 V or V _{CC} – 0.1 V | | | |
| | | 4.5 | 2.25 | 1.35 | 1.35 | | | | | |
| | | 5.5 | 2.75 | 1.65 | 1.65 | | | | | |
| V _{OH} | Minimum High Level Output Voltage | 3.0 | 2.99 | 2.9 | 2.9 | V | I _{OUT} = –50 μA | | | |
| | | 4.5 | 4.49 | 4.4 | 4.4 | | | | | |
| | | 5.5 | 5.49 | 5.4 | 5.4 | | | | | |
| | 3.0 | – | 2.56 | 2.46 | V | *V _{IN} = V _{IL} or V _{IH} –12 mA I _{OH} –24 mA –24 mA | | | | |
| | | | | | | | 4.5 | – | 3.86 | 3.76 |
| | | | | | | | 5.5 | – | 4.86 | 4.76 |
| V _{OL} | Maximum Low Level Output Voltage | 3.0 | 0.002 | 0.1 | 0.1 | V | I _{OUT} = 50 μA | | | |
| | | 4.5 | 0.001 | 0.1 | 0.1 | | | | | |
| | | 5.5 | 0.001 | 0.1 | 0.1 | | | | | |
| | 3.0 | – | 0.36 | 0.44 | V | *V _{IN} = V _{IL} or V _{IH} 12 mA I _{OL} 24 mA 24 mA | | | | |
| | | | | | | | 4.5 | – | 0.36 | 0.44 |
| | | | | | | | 5.5 | – | 0.36 | 0.44 |
| I _{IN} | Maximum Input Leakage Current | 5.5 | – | ±0.1 | ±1.0 | μA | V _I = V _{CC} , GND | | | |
| I _{OLD} | †Minimum Dynamic Output Current | 5.5 | – | – | 75 | mA | V _{OLD} = 1.65 V Max | | | |
| I _{OHD} | | 5.5 | – | – | –75 | mA | V _{OHD} = 3.85 V Min | | | |
| I _{CC} | Maximum Quiescent Supply Current | 5.5 | – | 4.0 | 40 | μA | V _{IN} = V _{CC} or GND | | | |

*All outputs loaded; thresholds on input associated with output under test.

†Maximum test duration 2.0 ms, one output loaded at a time.

NOTE: I_{IN} and I_{CC} @ 3.0 V are guaranteed to be less than or equal to the respective limit @ 5.5 V V_{CC}.

MC74AC74, MC74ACT74

AC CHARACTERISTICS (For Figures and Waveforms – See Section 3 of the ON Semiconductor FACT Data Book, DL138/D)

| Symbol | Parameter | V _{CC} * (V) | 74AC | | | 74AC | | Unit | Fig. No. |
|------------------|---|--------------------------|--|-------------|--------------|--|--------------|------|----------|
| | | | T _A = +25°C C _L = 50 pF | | | T _A = -40°C to +85°C C _L = 50 pF | | | |
| | | | Min | Typ | Max | Min | Max | | |
| f _{max} | Maximum Clock Frequency | 3.3 5.0 | 100 140 | 125 160 | – – | 95 125 | – – | MHz | 3–3 |
| t _{PLH} | Propagation Delay C _{Dn} or S _{Dn} to Q _n or Q _n | 3.3 5.0 | 5.0 3.5 | 8.0 6.0 | 12.5 9.0 | 4.0 3.0 | 13.0 10.0 | ns | 3–6 |
| t _{PHL} | Propagation Delay C _{Dn} or S _{Dn} to Q _n or Q _n | 3.3 5.0 | 4.0 3.0 | 10.5 8.0 | 12.0 9.5 | 3.5 2.5 | 13.5 10.5 | ns | 3–6 |
| t _{PLH} | Propagation Delay C _{Pn} to Q _n or Q _n | 3.3 5.0 | 4.5 3.5 | 8.0 6.0 | 13.5 10.0 | 4.0 3.0 | 16.0 10.5 | ns | 3–6 |
| t _{PHL} | Propagation Delay C _{Pn} to Q _n or Q _n | 3.3 5.0 | 3.5 2.5 | 8.0 6.0 | 14.0 10.0 | 3.5 2.5 | 14.5 10.5 | ns | 3–6 |

*Voltage Range 3.3 V is 3.3 V ±0.3 V.
Voltage Range 5.0 V is 5.0 V ±0.5 V.

AC OPERATING REQUIREMENTS

| Symbol | Parameter | V _{CC} * (V) | 74AC | | 74AC | | Unit | Fig. No. |
|------------------|--|--------------------------|--|--------------------|--|----|------|----------|
| | | | T _A = +25°C C _L = 50 pF | | T _A = -40°C to +85°C C _L = 50 pF | | | |
| | | | Typ | Guaranteed Minimum | | | | |
| t _s | Set-up Time, HIGH or LOW D _n to CP _n | 3.3 5.0 | 1.5 1.0 | 4.0 3.0 | 4.5 3.0 | ns | 3–9 | |
| t _h | Hold Time, HIGH or LOW D _n to CP _n | 3.3 5.0 | -2.0 -1.5 | 0.5 0.5 | 0.5 0.5 | ns | 3–9 | |
| t _w | C _{Pn} or C _{Dn} or S _{Dn} Pulse Width | 3.3 5.0 | 3.0 2.5 | 5.5 4.5 | 7.0 5.0 | ns | 3–6 | |
| t _{rec} | Recovery Time C _{Dn} or S _{Dn} to CP | 3.3 5.0 | -2.5 -2.0 | 0 0 | 0 0 | ns | 3–9 | |

*Voltage Range 3.3 V is 3.3 V ±0.3 V.
Voltage Range 5.0 V is 5.0 V ±0.5 V.

MC74AC74, MC74ACT74

DC CHARACTERISTICS

| Symbol | Parameter | V _{CC} (V) | 74ACT | | 74ACT | | Unit | Conditions |
|-------------------|--|------------------------|------------------------|-------------------|---------------------------------|----|---|------------|
| | | | T _A = +25°C | | T _A = -40°C to +85°C | | | |
| | | | Typ | Guaranteed Limits | | | | |
| V _{IH} | Minimum High Level Input Voltage | 4.5 | 1.5 | 2.0 | 2.0 | V | V _{OUT} = 0.1 V or V _{CC} - 0.1 V | |
| | | 5.5 | 1.5 | 2.0 | 2.0 | | | |
| V _{IL} | Maximum Low Level Input Voltage | 4.5 | 1.5 | 0.8 | 0.8 | V | V _{OUT} = 0.1 V or V _{CC} - 0.1 V | |
| | | 5.5 | 1.5 | 0.8 | 0.8 | | | |
| V _{OH} | Minimum High Level Output Voltage | 4.5 | 4.49 | 4.4 | 4.4 | V | I _{OUT} = -50 μA | |
| | | 5.5 | 5.49 | 5.4 | 5.4 | | | |
| | | 4.5 | - | 3.86 | 3.76 | V | *V _{IN} = V _{IL} or V _{IH} -24 mA | |
| | | 5.5 | - | 4.86 | 4.76 | | | |
| V _{OL} | Maximum Low Level Output Voltage | 4.5 | 0.001 | 0.1 | 0.1 | V | I _{OUT} = 50 μA | |
| | | 5.5 | 0.001 | 0.1 | 0.1 | | | |
| | | 4.5 | - | 0.36 | 0.44 | V | *V _{IN} = V _{IL} or V _{IH} 24 mA | |
| | | 5.5 | - | 0.36 | 0.44 | | | |
| I _{IN} | Maximum Input Leakage Current | 5.5 | - | ±0.1 | ±1.0 | μA | V _I = V _{CC} , GND | |
| ΔI _{CCT} | Additional Max. I _{CC} /Input | 5.5 | 0.6 | - | 1.5 | mA | V _I = V _{CC} - 2.1 V | |
| I _{OLD} | †Minimum Dynamic Output Current | 5.5 | - | - | 75 | mA | V _{OLD} = 1.65 V Max | |
| I _{OHD} | | 5.5 | - | - | -75 | mA | V _{OHD} = 3.85 V Min | |
| I _{CC} | Maximum Quiescent Supply Current | 5.5 | - | 4.0 | 40 | μA | V _{IN} = V _{CC} or GND | |

*All outputs loaded; thresholds on input associated with output under test.

†Maximum test duration 2.0 ms, one output loaded at a time.

AC CHARACTERISTICS (For Figures and Waveforms – See Section 3 of the ON Semiconductor FACT Data Book, DL138/D)

| Symbol | Parameter | V _{CC} * (V) | 74ACT | | | 74ACT | | Unit | Fig. No. |
|------------------|---|--------------------------|--|-----|------|---|------|------|----------|
| | | | T _A = +25°C C _L = 50 pF | | | T _A = -40°C to +85°C C _L = 50 pF | | | |
| | | | Min | Typ | Max | Min | Max | | |
| f _{max} | Maximum Clock Frequency | 5.0 | 145 | 210 | - | 125 | - | MHz | 3-3 |
| t _{PLH} | Propagation Delay C _{Dn} or S _{Dn} to Q _n or Q _n | 5.0 | 3.0 | 5.5 | 9.5 | 2.5 | 10.5 | ns | 3-6 |
| t _{PHL} | Propagation Delay C _{Dn} or S _{Dn} to Q _n or Q _n | 5.0 | 3.0 | 6.0 | 10.0 | 3.0 | 11.5 | ns | 3-6 |
| t _{PLH} | Propagation Delay C _{Pn} to Q _n or Q _n | 5.0 | 4.0 | 7.5 | 11.0 | 4.0 | 13.0 | ns | 3-6 |
| t _{PHL} | Propagation Delay C _{Pn} to Q _n or Q _n | 5.0 | 3.5 | 6.0 | 10.0 | 3.0 | 11.5 | ns | 3-6 |

*Voltage Range 5.0 V is 5.0 V ±0.5 V.

MC74AC74, MC74ACT74

AC OPERATING REQUIREMENTS

| Symbol | Parameter | V _{CC} * (V) | 74ACT | | 74ACT | | Unit | Fig. No. |
|------------------|--|--------------------------|--|--------------------|--|----|------|----------|
| | | | T _A = +25°C C _L = 50 pF | | T _A = -40°C to +85°C C _L = 50 pF | | | |
| | | | Typ | Guaranteed Minimum | | | | |
| t _s | Set-up Time, HIGH or LOW D _n to CP _n | 5.0 | 1.0 | 3.0 | 3.5 | ns | 3-9 | |
| t _h | Hold Time, HIGH or LOW D _n to CP _n | 5.0 | -0.5 | 1.0 | 1.0 | ns | 3-9 | |
| t _w | C _{Pn} or \overline{C}_{Dn} or \overline{S}_{Dn} Pulse Width | 5.0 | 3.0 | 5.0 | 6.0 | ns | 3-6 | |
| t _{rec} | Recovery Time \overline{C}_{Dn} or \overline{S}_{Dn} to CP | 5.0 | -2.5 | 0 | 0 | ns | 3-9 | |

*Voltage Range 5.0 V is 5.0 V ±0.5 V.

CAPACITANCE

| Symbol | Parameter | Value Typ | Unit | Test Conditions |
|-----------------|-------------------------------|--------------|------|-------------------------|
| C _{IN} | Input Capacitance | 4.5 | pF | V _{CC} = 5.0 V |
| C _{PD} | Power Dissipation Capacitance | 35 | pF | V _{CC} = 5.0 V |

MC74AC74, MC74ACT74

ORDERING INFORMATION

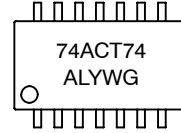
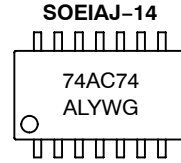
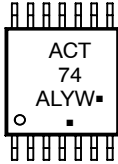
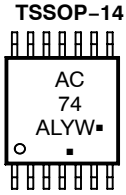
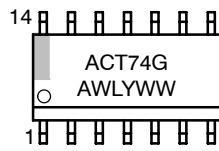
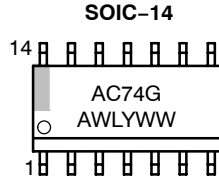
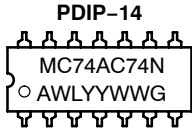
| Device | Package | Shipping† |
|----------------|------------------------|------------------|
| MC74AC74N | PDIP-14 | 25 Units/Rail |
| MC74AC74NG | PDIP-14 (Pb-Free) | |
| MC74ACT74N | PDIP-14 | |
| MC74ACT74NG | PDIP-14 (Pb-Free) | |
| MC74AC74D | SOIC-14 | 55 Units/Rail |
| MC74AC74DG | SOIC-14 (Pb-Free) | |
| MC74AC74DR2 | SOIC-14 | 2500/Tape & Reel |
| MC74AC74DR2G | SOIC-14 (Pb-Free) | |
| MC74ACT74D | SOIC-14 | 55 Units/Rail |
| MC74ACT74DG | SOIC-14 (Pb-Free) | |
| MC74ACT74DR2 | SOIC-14 | 2500/Tape & Reel |
| MC74ACT74DR2G | SOIC-14 (Pb-Free) | |
| MC74AC74DT | TSSOP-14* | 96 Units/Rail |
| MC74AC74DTR2 | TSSOP-14* | 2500/Tape & Reel |
| MC74AC74DTR2G | TSSOP-14* | |
| MC74ACT74DT | TSSOP-14* | 96 Units/Rail |
| MC74ACT74DTR2 | TSSOP-14* | 2500/Tape & Reel |
| MC74ACT74DTR2G | TSSOP-14* | |
| MC74AC74MEL | SOEIAJ-14 | 2000/Tape & Reel |
| MC74AC74MELG | SOEIAJ-14 (Pb-Free) | |
| MC74ACT74MEL | SOEIAJ-14 | |
| MC74ACT74MELG | SOEIAJ-14 (Pb-Free) | |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

*This package is inherently Pb-Free.

MC74AC74, MC74ACT74

MARKING DIAGRAMS

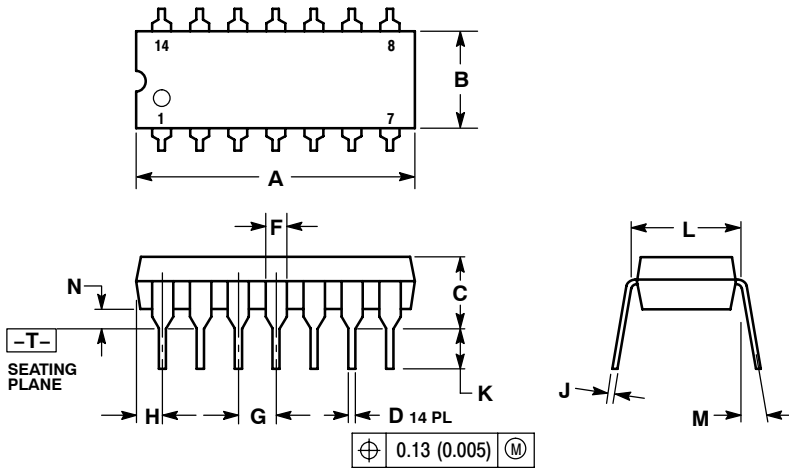


A = Assembly Location
WL, L = Wafer Lot
YY, Y = Year
WW, W = Work Week
G or ▪ = Pb-Free Package
(Note: Microdot may be in either location)

MC74AC74, MC74ACT74

PACKAGE DIMENSIONS

PDIP-14
CASE 646-06
ISSUE P



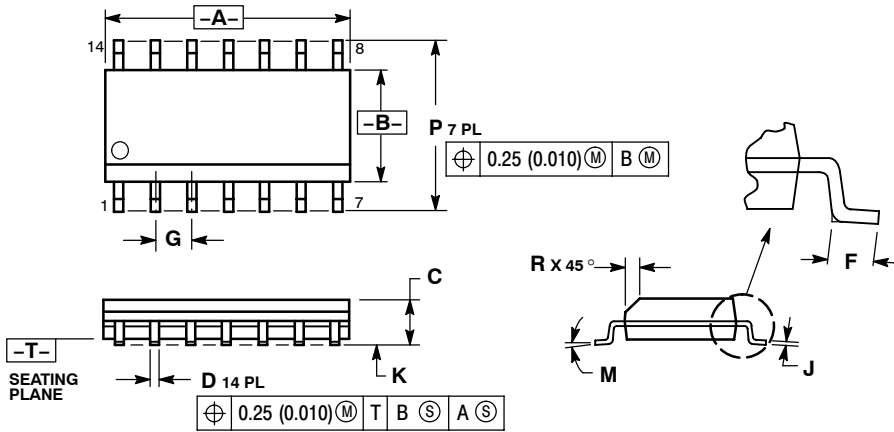
NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.
4. DIMENSION B DOES NOT INCLUDE MOLD FLASH.
5. ROUNDED CORNERS OPTIONAL.

| DIM | INCHES | | MILLIMETERS | |
|-----|-----------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.715 | 0.770 | 18.16 | 19.56 |
| B | 0.240 | 0.260 | 6.10 | 6.60 |
| C | 0.145 | 0.185 | 3.69 | 4.69 |
| D | 0.015 | 0.021 | 0.38 | 0.53 |
| F | 0.040 | 0.070 | 1.02 | 1.78 |
| G | 0.100 BSC | | 2.54 BSC | |
| H | 0.052 | 0.095 | 1.32 | 2.41 |
| J | 0.008 | 0.015 | 0.20 | 0.38 |
| K | 0.115 | 0.135 | 2.92 | 3.43 |
| L | 0.290 | 0.310 | 7.37 | 7.87 |
| M | --- | 10° | --- | 10° |
| N | 0.015 | 0.039 | 0.38 | 1.01 |

MC74AC74, MC74ACT74

SOIC-14
CASE 751A-03
ISSUE H

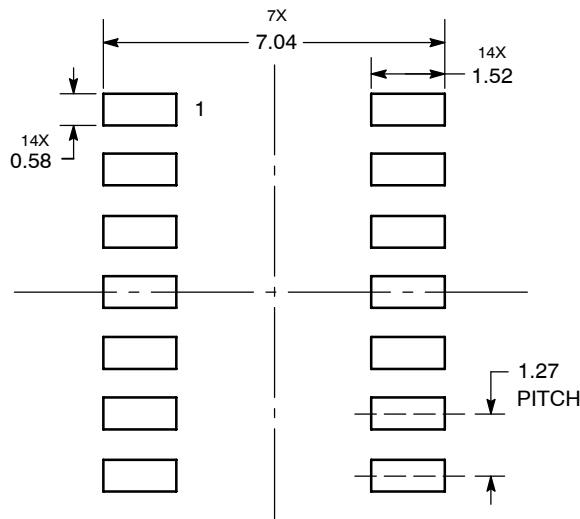


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSIONS A AND B DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
5. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 (0.005) TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.

| MILLIMETERS | | INCHES | | |
|-------------|----------|--------|-----------|-------|
| DIM | MIN | MAX | MIN | MAX |
| A | 8.55 | 8.75 | 0.337 | 0.344 |
| B | 3.80 | 4.00 | 0.150 | 0.157 |
| C | 1.35 | 1.75 | 0.054 | 0.068 |
| D | 0.35 | 0.49 | 0.014 | 0.019 |
| F | 0.40 | 1.25 | 0.016 | 0.049 |
| G | 1.27 BSC | | 0.050 BSC | |
| J | 0.19 | 0.25 | 0.008 | 0.009 |
| K | 0.10 | 0.25 | 0.004 | 0.009 |
| M | 0° | 7° | 0° | 7° |
| P | 5.80 | 6.20 | 0.228 | 0.244 |
| R | 0.25 | 0.50 | 0.010 | 0.019 |

SOLDERING FOOTPRINT*



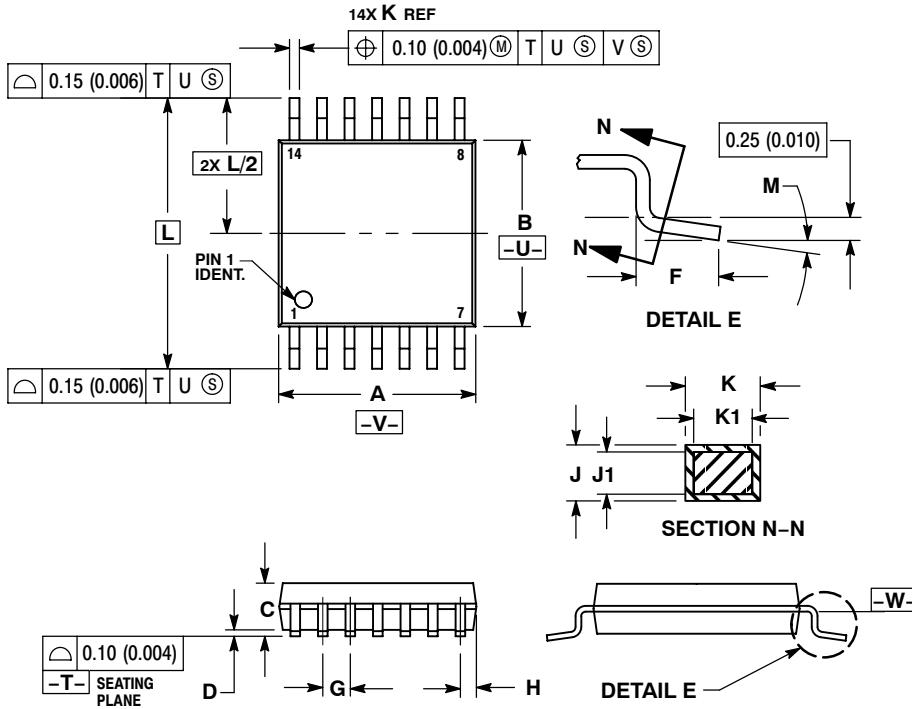
DIMENSIONS: MILLIMETERS

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

MC74AC74, MC74ACT74

PACKAGE DIMENSIONS

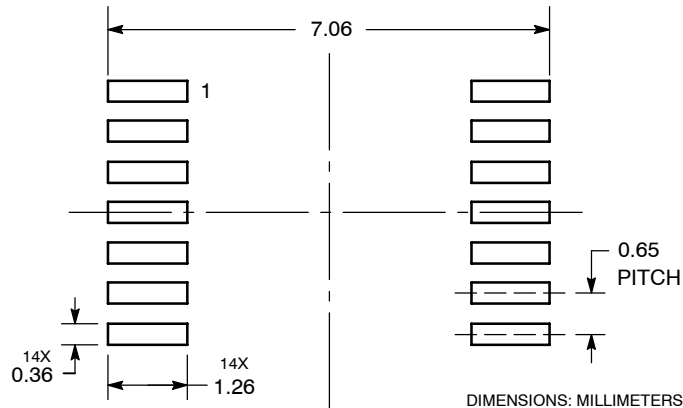
TSSOP-14
CASE 948G-01
ISSUE B



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: MILLIMETER.
 3. DIMENSION A DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH OR GATE BURRS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.
 4. DIMENSION B DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.25 (0.010) PER SIDE.
 5. DIMENSION K DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 (0.003) TOTAL IN EXCESS OF THE K DIMENSION AT MAXIMUM MATERIAL CONDITION.
 6. TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
 7. DIMENSION A AND B ARE TO BE DETERMINED AT DATUM PLANE -V-.

| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|------|-----------|-------|
| | MIN | MAX | MIN | MAX |
| A | 4.90 | 5.10 | 0.193 | 0.200 |
| B | 4.30 | 4.50 | 0.169 | 0.177 |
| C | --- | 1.20 | --- | 0.047 |
| D | 0.05 | 0.15 | 0.002 | 0.006 |
| F | 0.50 | 0.75 | 0.020 | 0.030 |
| G | 0.65 BSC | | 0.026 BSC | |
| H | 0.50 | 0.60 | 0.020 | 0.024 |
| J | 0.09 | 0.20 | 0.004 | 0.008 |
| J1 | 0.09 | 0.16 | 0.004 | 0.006 |
| K | 0.19 | 0.30 | 0.007 | 0.012 |
| K1 | 0.19 | 0.25 | 0.007 | 0.010 |
| L | 6.40 BSC | | 0.252 BSC | |
| M | 0° 8° | | 0° 8° | |

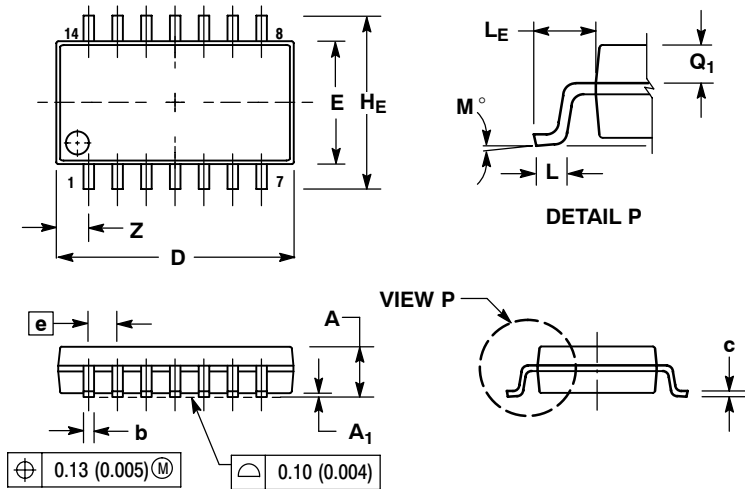
SOLDERING FOOTPRINT*



*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

MC74AC74, MC74ACT74

SOEIAJ-14
CASE 965-01
ISSUE A



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS AND ARE MEASURED AT THE PARTING LINE. MOLD FLASH OR PROTRUSIONS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.
4. TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
5. THE LEAD WIDTH DIMENSION (b) DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 (0.003) TOTAL IN EXCESS OF THE LEAD WIDTH DIMENSION AT MAXIMUM MATERIAL CONDITION. DAMBAR CANNOT BE LOCATED ON THE LOWER RADIUS OR THE FOOT. MINIMUM SPACE BETWEEN PROTRUSIONS AND ADJACENT LEAD TO BE 0.46 (0.018).

| DIM | MILLIMETERS | | INCHES | |
|----------------|-------------|-------|-----------|-------|
| | MIN | MAX | MIN | MAX |
| A | --- | 2.05 | --- | 0.081 |
| A ₁ | 0.05 | 0.20 | 0.002 | 0.008 |
| b | 0.35 | 0.50 | 0.014 | 0.020 |
| c | 0.10 | 0.20 | 0.004 | 0.008 |
| D | 9.90 | 10.50 | 0.390 | 0.413 |
| E | 5.10 | 5.45 | 0.201 | 0.215 |
| e | 1.27 BSC | | 0.050 BSC | |
| H _E | 7.40 | 8.20 | 0.291 | 0.323 |
| 0.50 | 0.50 | 0.85 | 0.020 | 0.033 |
| L _E | 1.10 | 1.50 | 0.043 | 0.059 |
| M | 0 ° | 10 ° | 0 ° | 10 ° |
| Q ₁ | 0.70 | 0.90 | 0.028 | 0.035 |
| Z | --- | 1.42 | --- | 0.056 |

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